

## REMARKS

No Claims were deleted. None was added. No fees are due. If the Office disagrees, it may charge Deposit Account No. 07-1077 for the payment.

§103 Rejection using U.S. Pat. No. 4,311,628 (Abdou-Sabet et al.) in view of U.S. Pat. Nos. 3,578,614 (Wszolek) and 5,145,913 (Gerber)

Applicants agree with the Office that Abdou-Sabet et al. do not teach using chloride salts of magnesium, calcium, sodium, or potassium when making a thermoplastic elastomers, or more particularly, the subset category of thermoplastic vulcanizates. Applicants also agree with the Office that Abdou-Sabet et al. do not teach using citric or oxalic acid.

Therefore, the Office has found Wszolek to teach the use of alpha-hydroxy-carboxylic acids as curing rate accelerators for curable polymer systems. Also, the Office has found Gerber to teach the use of metal chlorides to cure phenolic resins.

There are several problems with this *asserted* combination which is actually an aggregate of unrelated art.

1. Wszolek does not teach the accelerated cure of EPDM; Wszolek teaches the accelerated cure of polythiols *with* polyenes, of which EPDM is one type (Col. 1, Lines 1-4). There is a problem with using Wszolek to supply what Abdou-Sabet lacks. Claim 1 above uses the catalyst system to cure EPDM, not to cure EPDM with something else. Please see also Claim 9 above. If PHOSITA were to read Wszolek, PHOSITA would not contemplate using Wszolek with Abdou-Sabet, because Wszolek is making *adhesives*, not thermoplastic vulcanizates. What results from Wszolek's curing of a polythiol and a polyene in liquid form is a "solid, crosslinked, three dimensional network polythioether polymer system upon curing." (Col.6, Lines 49-54). No PHOSITA would look to a teaching about curing polythioethers to find a solution to a long-felt need for curing EPDM.

2. Gerber does not teach the curing of EPDM. Gerber teaches the curing of phenolic resins<sup>1</sup>. Abdou-Sabet et al. are *using* phenolics to cure EPDM. No PHOSITA would look to Gerber to find a curing agent for a phenolic resin, to fill a gap in the teaching of Abdou-Sabet et al. who is using phenolics to cure EPDM.

3. Both Wszolek and Gerber need to be considered by the Office *for all that they teach*, not convenient pieces which identify specific chemicals missing from the teaching of Abdou-Sabet et al. It is inappropriate for the Office to benefit from the future looking back to what Applicants encountered in solving their problem. Applicants worked hard and found a novel and inventive combination of existing chemicals to provide catalysis for curing the EPDM to form a thermoplastic vulcanizate.

4. Applicants have invented a combination catalyst system of non-brominated phenolic resin + non-transition metal chloride + oxalic acid or citric acid or both. The Office has assembled an unrelated aggregate of Abdou-Sabet et al., Wszolek, and Gerber which *does not mean* it would be obvious to PHOSITA to combine the three merely because each of Abdou-Sabet et al., Wszolek, and Gerber have *independently* thought to cure EPDM with phenolics (Abdou-Sabet et al.); to cure polythioethers with alpha-hydroxy-carboxylic acids (Wszolek); and to cure phenolic resins with metal chlorides (Gerber). The *aggregate* does not equal the *combination* which Applicants have invented.

5. As previously agreed during this examination, the art of curing EPDM is an *unpredictable* art. No one *knows* whether a reaction will yield what is *hoped*. PHOSITA, presented with Abdou-Sabet et al., with Wszolek, and with Gerber, in the aggregate, would not pick and choose among their teachings to predict the

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<sup>1</sup> Indeed, Gerber is teaching the *retarding* of the curing of phenolic resins. Any acceleration of curing would be counter to what Gerber wants.

particular combination which Applicants found to work, and work well, as shown by their many examples in Applicants' application.

6. As a reminder from KSR, "When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." (Emphasis Added) The curing of EPDM elastomer into a vulcanizate can not be considered "predictable." PHOSITA would not be encouraged by the *aggregate* of Abdou-Sabet et al., Wszolek (adhesives), and Gerber (shoe soles) to even *try* the combination which Applicants have invented. Applicants are entitled to the grant of a patent as a reward for their unobvious advancement in their field of endeavor.

§103 Rejection using U.S. Pat. No. 3,287,440 (Giller et al.) and Wszolek

Applicants agree with the Office that Giller et al. do not teach the use of citric acid or oxalic acid or both.

Applicants disagree that using Wszolek is appropriate to fill the Giller et al. hole, for the reasons stated above. Wszolek is making a curable adhesive!!

Giller et al. and Wszolek are also an aggregate of references, not a proper *prima facie* combination. PHOSITA would not be expected to look to Wszolek which teaches acids for use in reacting polythiols with polyenes to make polythioether adhesives to adhere metals. It would not even be obvious to *try* citric acid or oxalic acid as curing agents for adhesives with the system taught by Giller et al.

As required by KSR, "...there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."

Though inventing admittedly a major advance in the elastomer art, Giller et al. were ignorant of the value of citric acid and oxalic acid. If PHOSITA wanted to make a polythioether, Wszolek teaches both acids are quite useful. But

PHOSITA would not go looking the polythioether art to fix a problem Giller et al. failed to recognize. Where is the rational underpinning required of the Office by KSR that PHOSITA would be expected (it must be *obvious*!) to divine from Wszolek that an acid used to facilitate the curing of polythioether would be *the* solution to what Giller et al. failed to understand – that citric acid or oxalic acid or both could be used with non-brominated phenolic resins and non-transition metal chlorides to “cure the uncured elastomer and to form the thermoplastic vulcanizate” (Claim 9)?

When one reference teaches in one direction and another reference teaches in a totally different direction, and neither alone nor together teaches in the direction which Applicants have invented, Applicants should be granted a patent for their unexpected success in an unpredictable art.

“A person shall be entitled to a patent unless ...” 35 USC §102.

#### Conclusion

Applicants are ready for allowance or appeal. Applicants hope for the former.

Respectfully submitted by:

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Date

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